

## ABSTRACT

Optimum bond parameters for a bond force  $F_B$  and an ultrasonic variable  $P_B$  and, optionally, at least one further bond parameter  $G_B$  of a Wire Bonder for ball bonding can be determined by means of a method with which a predetermined number of bond cycles is carried out, whereby the bond parameters to be optimised are each varied within a predefined range, whereby with each bond cycle  $n$ , after attachment of the wire ball to the connection point of the semiconductor chip, the following steps are carried out:

- a) Application of a predetermined bond force  $F_{B1}$ ,
- b) Movement of the capillary out of the bond position in a predetermined horizontal direction whereby the current  $I_{B,n}$  flowing through the drive which moves the capillary is monitored,
- c) Stopping the movement of the capillary as soon as the current  $I_{B,n}$  reduces,
- d) Determining the maximum of the current  $I_{B,n,max}(F_{B,n}, P_{B,n}, G_{B,n})$  from the progression of the current  $I_{B,n}(t)$  established during steps b) and c)
- e) Movement of the capillary to the bond position,
- f) Attachment of the wire ball to the connection point of the semiconductor chip,

and whereby, from the values  $I_{B,n,max}(F_{B,n}, P_n, G_n)$  established with the  $n$  bond cycles, those values for the bond force  $F_B$ , the ultrasonic variable  $P_B$  and the, if necessary, at least one further bond parameter  $G_B$  are determined as optimum bond parameters for which the current  $I_{B,n,max}(F_{B,n}, P_n, G_n)$  reaches a maximum.